Recd April 26th
Ay —— 29

Pleasant Hill Cass Co Mo April 22d —
1864

Dr Engelmann

Dr Sir

On Last Friday 15th day was quite pleasant in morning - Afternoon was cloudy and cool-; between 4 and 5 P.M. Wind from N.E. blowing dark clouds and some rain fell with a very little hail - I hear that hail fell in St Louis about 7 P.M. where I was (about 10 ms N W of this place in Jackson co) it fell about 4½ P.M. and a very little.

It is only within two days past that we could really say Spring was near - Only two or three plants have been in bloom until within a few days past - I send two Specimens - One I think an Erithronium I noticed in bloom on last of March both on low grounds and on ridges - recently it is quite abundant, and it only, on Prairies - one is from Prairie the other from low ground that on low ground has a large & spotted leaf - The leaf Specimen I send is not as large & spotted as some The one from Prairie scarcely a leaf as you see - that from Prairie a large bulb nearly a ½ inch through in horizontal direction & ⅓ larger - One from low ground is scarcely bulbous ——

The other, purple flower growing in clusters I have noticed on low grounds since 30th March – These and one other small flower were all that were in bloom at that time, and indeed until about a week ago –

Yesterday I noticed sysyrinchium & yellow violet and 3 days ago a purple violet –

Claytonia has been in bloom about 4 days –

Can the last edition of Gray's Botany be procured in St Louis – I have no work here on the Subject –

Excuse me for intruding this on you

Yours truly

G. C. Broadhead

P.S. as I ~~[illegible]~~ expect to remain in this neighborhood all Summer I shall endeavor to collect all plants peculiar to the Country –

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Recd May 13
Ans May 15

Pleasant Hill Cass Co Mo May 8 - 1864

Dr Engelmann

Dr Sir

Yours of 29th Ult was received - I am glad you appreciate the small results of my observations - The Erithronium has now ceased to bloom - I inclose you a large leaf spotted collected on creek bottoms - it has been collected several days - also a white Viola - collected on bottoms - it may be a variety of cucullata - the V. pedata (?) I presume now abounds on Prairies and I send you, is it not the same as the velvet petaled flower found on barren woody hill sides & post oak ridges - true this has not velvet petals - but the leaf seems the same. On Prairie we now have the Baptisia - Lithospermum - Astragalus - (often abounding) - and the last also on rocky glades with Verbena of a beautiful pink color - Red bud & Plum are also in bloom & several plants whose name I am not familiar with -

With regard to the character of this county - In Geology we have the Upper Coal Series but no coal - on Eastern 6 ms of my division mostly Sandstone

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and Sandy & argillaceous shales forming a Topography of flat bottoms – from which often long gentle ascents to a rolling & gently undulating country – above which are still occasional higher Hills or Knobs sometimes with limestone cropping out high up –

at this place we have limestone near Hill tops shales & Sandstone below Westward & N.W. up streams we have rocky limestone bluffs the hills gently rolling backward Near heads of streams are a few Elm – box Elder Cornus paniculata – lower down are found the same with Hazel & Laurel Oak & Red Elm buckeye & pignut Hickory – farther down stream timber begins to appear on hills and on bottoms are found Bl. Walnut & pin O. Sw. Wh. O – (and R. chestnut O.?) The country is essentially a prairie region & timber only confined to the bottom lands & adjacent hills – The winds of course are often strong – & I am told that during last winter water froze in a well 20 ft deep – so that it could not be broken by letting a bucket fall on it – this from reliable Sources.

I have notice Honeysuckle (Lonicera?) on bottoms near head of Prairie stream The scrubby chestnut (or chinquapin O.) oak I think I have seen I send you leaf of Erithronium. Viola – Verbena. Astragalus a white violet & –.

I do not know the temperature here as I have not seen a thermometer – yrs truly

G. C. Broadhead

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Rec^d Nov 18th
Ans Nov 22d

Pleasant Hill Cass Co Mo
Nov 11 - 1864

Dr Engelmann
Dr Sir

On the night of the 2d & morning of the 3d we had a snow here about 5 inches in depth - during the next day it had mostly melted - The 8th was raining as also next day with some sleet & the morning of the 10th the sun shone on as beautiful a view as was ever witnessed, every leaf twig & branch of tree was covered with a thick coating of ice & innumerable icicles everywhere all glistening beautifully like diamonds —

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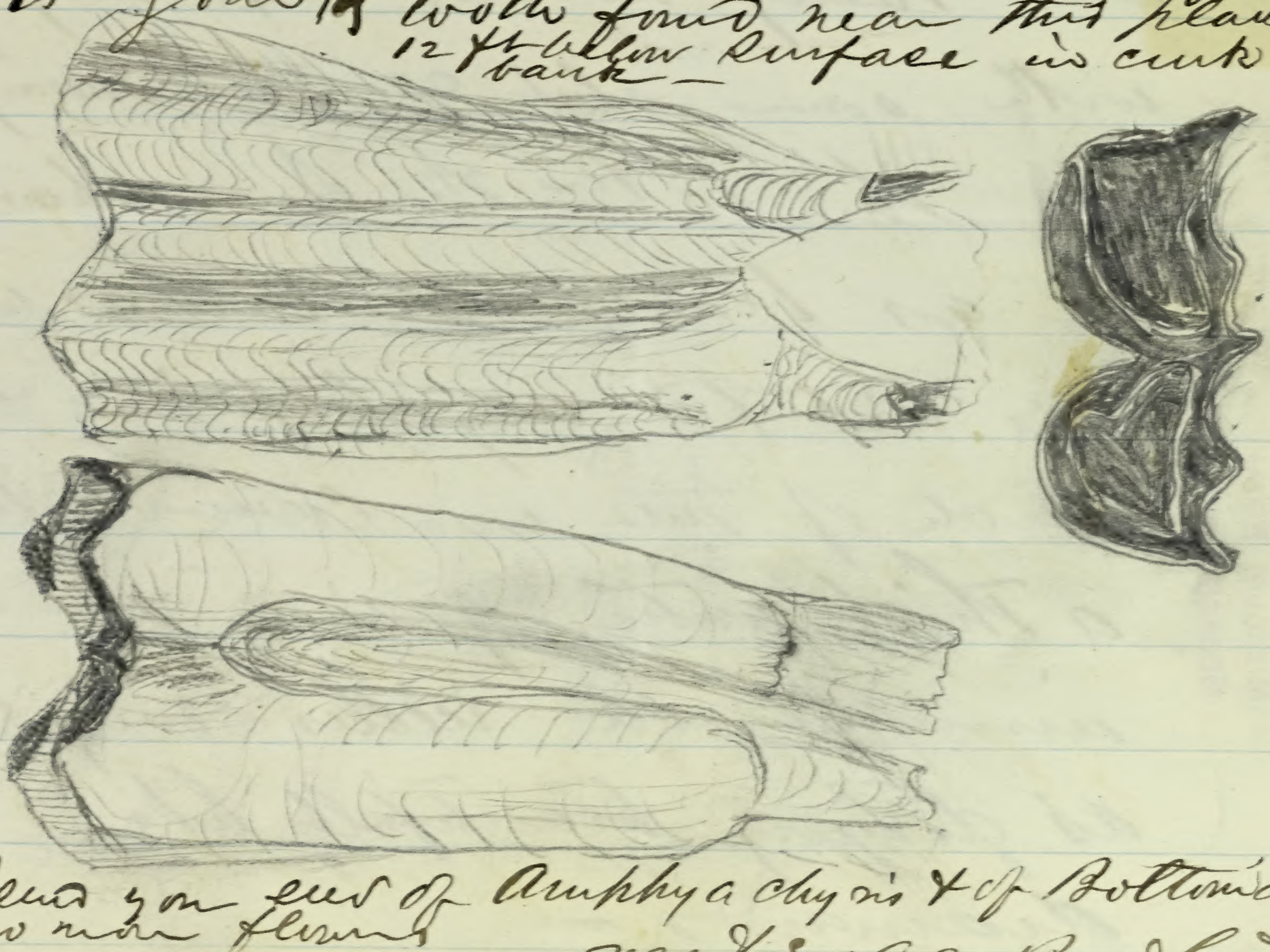
I rode out but my way was in many places so obstructed by the overhanging branches as almost to be impassible - & this continued nearly all day - Trees oak trees as large as my body were broken & limbs hung low bending from high above to the ground beneath - some trees many trees were entirely stripped of their branches - Today it is good

Below we have sketch of a tooth found near this place 12 ft below surface in creek bank -



I send you seed of Amphyachyris & of Boltonia no more flowers

yrs &c G. C. Broadhead

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Recd Dec 3d

Pleasant Hill Mo Dec 1 1864

Dr Engelman

Dr Sir

Yrs of 22d - Recd -

That Boltonia is not described in Gray - is it a new Species of your describing? - the latisquama -

The Astragalus Canadensis I do not remember to have seen in Eastern or Northern Missouri -

Not having a Thermometer I do n observe it - I would like to have a good one here so that I could note the changes - I think when I come down that I will have to get you to select one for me

Would it be too much to ask you to divide the collection - of plants - select [illegible] suit for yourself such as you would desire - One for the Academy

In case it should be of use
and it could be taken care
of & one for myself—
mine I would like to get
soon as I might come down
so that I could spare
leisure moments in studying
them this winter—I then
might be of better use
next Summer wherever I
might be—

I shall probably be
down very soon—or perhaps
not for 3 wks—

Yrs

G. C. Broadhead

P.S. I send seed of
Salvia azurea—
I only collected one additional
Sp. of Gentian—deep blue from Prairie—

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Recd May 15th Pleasant Hill Mo May 11 1868
Ans May 16

Dr Engelmann
Dr Sir

The plants were safely received

Inclosed please find a specimen of an umbelliferous plant - one noted by you as being rare - I occasionally find it on Rocky limestone slopes - on sunny spots - The specimen I send is not as fragrant as one I collected a few days ago - The stalk when bruised is very fragrant similar to Fennel or like Coriander - I could not make out your label of it - what is it - it is not in Gray -

I also send a specimen of corydalis - and a small white flowered plant - I also send a rude sketch of a small plant which I supposed to be a Sp. of Anemone - Only one have I found growing on rocky places in Prairie - Sepals white - outer ones beautiful purple spots on outside - In number sepals are 10 - only one plant found

We have had some heavy rains recently - last two days quite cold last night thin icy sheet on water I think vegetation must be this year nearly one month behind that of St Louis co. In April when I was in St Louis

Peach was in bloom full – I returned here after remaining ~~th~~ away more than a week & it was just beginning to bloom out –

Yrs Truly &c

G. C. Broadhead

Rec'd May 23rd
Ans May 24

Pleasant Hill Mo May 18th 1865

Dr Engelmann

Dr Sir

Yours of 16th received - Inclosed I send you a sample Collinsia verna - two other small plants - collected on Rocky places - I have the Anemone alive in a Box - Hope I may secure seed - I brought the plant 8 mi - in a paper the petals were slightly injured & dropped in a few days - The Peucedanum is found on limestone slopes on Rocks and wherever a certain limestone is found it is found & on no other rocks. It grows very near me & is now maturing its seed - which I will gather as many as I can - Corydalis also on similar localities is very near - scarcely blooming now I have one in a Box growing - The Fraxinus cuspidatum also grows on similar slopes to the above - and is more abundant - last year I found but few - this season a good many. Sorry I had not known sooner I might have collected many - I have probably a dozen which you can have - I can get seed if desired -

The morning of date of my last we
had frost here - many delicate
leaves suffered —

Soon I hope to be at more
leisure & will collect what I
can —

Yours truly

G. C. Broadhead

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Rec May 31st

Pleasant Hill Mo May 28 - 1865

Dr Engelmann
Dr Sir

Sowed away

Yrs of 24th recd —

I Can get a good many Specimens of Ar. Pitcheri & if possible will get seeds of same and of Draba Caroliniana if I can — I have some of latter but cannot at present lay hands on it. I have also seeds of Fraxinus & of Peucedanum — some collected scarcely dry but I presume they have perfected enough to germinate —

I found a few days ago a white Aquilegia Canadensis —

On last Wednesday afternoon a tremendous Storm here — Came from N. W. was terrific abt 12 ms. N. W of this appeared nearly at 6 P.M. at this point between 6 & 7 — 11 miles East ~~at~~ between 7 & 8 and I understand at Sedalia in Pettis Co — about 11 or 12 O'clock & blew Cars off Track —

Here it was accompanied with much thunder & lightning & a driving rain

Yrs Truly

G. C. Broadhead

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P.S. I have the Hydrophyllum appendiculatum – not collected last year –

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Rec^d June 13th

Pleasant Hill Mo June 11-1865

Dr Engelmann

Dr Sir -

Inclosed please find an Asclepias (not collected last year) looks like A. Meadii - am I correct? - only found this one specimen on an open Post Oak & Bl. Jack prairie - From same locality I send Sp. of plant with long scape (2 ft) with a hairy roundish lobed & toothed leaf - also a blue larkspur - an umbellifera - a large leaf of a plant - looks like a pumpkin leaf - but no vine or bloom as yet - - I know where two plants of it are yet growing - on a very wet low spot of ground - this leaf was lying by the plant having been broken off - I send also a Sp. of a plant found growing on wet ground - flower shaped much like that of Aphyllon - one other plant with pods - and a pale blue Larkspur This Delphinium is now much in bloom I have found none of deeper blue than the one I send - but many whiter

The Froxinum has a root reaching more than a foot in ground - found one leaves green another leaves seemed to have died - The root must certainly live through winter Is it Edible if cooked? -

Do you wish this and root of Peucedanum
kept alive - or the dried roots -
Do you wish roots of Delphinium also -
I remember finding a Species of *Vicia*
near White cloud in Kansas and at
one place in N. Missouri - not found here -
Also one or two of Trillium in East Mo -
not here - probably T. sessile is here -
I presume from what I hear that a Species
of *Talinum* grows near this place
I remember also a Sp. of Coreopsis (?) growing near
Iron Mtn & in Eastern Mo. - not found here -
The large yellow Oenothera found in Green Co -
I have not found any where here or in
Northern Mo — You remember a plant
(Leguminous) I showed you last year as having
found ~~it~~ in Johnson co 10 ms West of
Warrensburgh (I forget its name). I have
found it nowhere else

Quantities of ~~[illegible]~~ worms on dog fennel
& coarse weeds - but do not seem to hurt
anything useful -

I send plant with pod - of Draba Caroliniana (?)

Yours truly
G. C. Broadhead

Heracleum lanatum Mx
Hydrophyllum appendiculatum Mx
Asclep. Meadii angustifol. Torr
Arabis Canadensis L
Heuchera hispida Pursh — Draba Carol. hispidula
Thaspium barbinode Nutt — Delph. azureum?
Gratiola virginiana L

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Recd July 26.
Ans July 29.

Pleasant Hill Mo — July 23 — 1865

Dr Engelmann

Dr Sir —

Inclosed please find a couple of water plants — The one with a yellow flower is quite pretty floating on water — The Nelumbium luteum is now in bloom & looking beautiful — it is fragrant — I cannot remember having seen the Nymphaea odorata in waters of this part of State but I know I have seen it in Eastern Mo —

I found a flower in Maries & in Taney counties which I have not found anywhere else in Mo — I did not analyse it — but Swallow who was with me in Taney said it was a Pink — Its color is deep crimson and stalk sticky with a gluey substance making it stick to ones fingers — Found it on Post oak & Bl. Jack openings near Swan creek Taney co — & on Post Oak barrens in Maries Co — at one locality near Little Tavern creek in August —

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In Marias co on Barrens the Silphium terebinthinaceum abund; Also in S.W. Mo — not here — & very rare in N.E. Mo —

Yrs &c

G. C. Broadhead

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Recd Aug 18

Pleasant Hill Mo Aug-15-1865

Dr Engelmann
Dr Sir;

Inclosed please find a swale water plant with a white flower it has been pressed for some time - another plant bearing a yellow flower also from wet ground -

I also send a white Amphicarpaea? Last year I had the A. monoica - is this only a variety or is it a distinct Species - I find a great Many of them - mostly growing on white oak landed - shaded twining around weeds such as Solidago &c - The plant in general appearance looks Smaller than the purple but may be owing to its growing on thinner soil - It is quite pretty - its calix seems more hairy than the purple -

I also send a dark or brownish red flower from a twining plant - quite pretty could it be Apios?

You will also find in an Envelope — part of a plant with some seed — and by looking carefully one flower loose — It had a beautiful bright deep purple — bloomed more than a month ago — Campylocera leptocarpa Nutt

I shall hereafter probably be able to attend a little better to my botany — What plants would you particularly wish ~~that~~ will hereafter bloom?

I notice two species of Impatiens
In Collection last year I had Lophanthus scrophulariaefolius — we have a white & also a slightly yellowish plant — 2 sp —.

I do not think we have the Trillium here — nor the pretty Sabbatia of South Mo —

Yours &c
G. C. Broadhead

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Recd Sept 29th

Pleasant Hill Mo Sept 17-1865

Dr Engelmann

Dr Sir:-

Since my last I have found several plants of Gentiana Alba. I have not heretofore found it except on Spencers Creek in Ralls County. 5 or six years ago - I have found it at 3 or 4 localities in this neighborhood growing on rich shaded & moist uplands near prairie, I also have Hibiscus militaris - . Another Hibiscus which I suppose to be H. Trionum I often find on wastes & in fields -

I find a pretty white flowered plant which I suppose to be Ipomaea lacunosa flower small - growing in fields & wastes,

I have been residing this summer in a rented House - this fall expect to go into our own house - Do not know whether in time to commence a garden but expect to have one afterwards -

Yours &c

G. C. Broadhead

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Pleasant Hill Mo
Sept 19 1865

Dr Engelmann
Dr Sir

Inclosed please find Asters. One which I suppose to be the A. Sericeus leaves all near top. The other probably a variety of A. Nova Angliae but it is not exactly like a Specimen of the latter I have with me at present. The A. Sericeus (?) I found on High dry prairie slope in Jackson County – over a space of two or 3 acres abounding & found no where else

Yours
E. C. Broadhead

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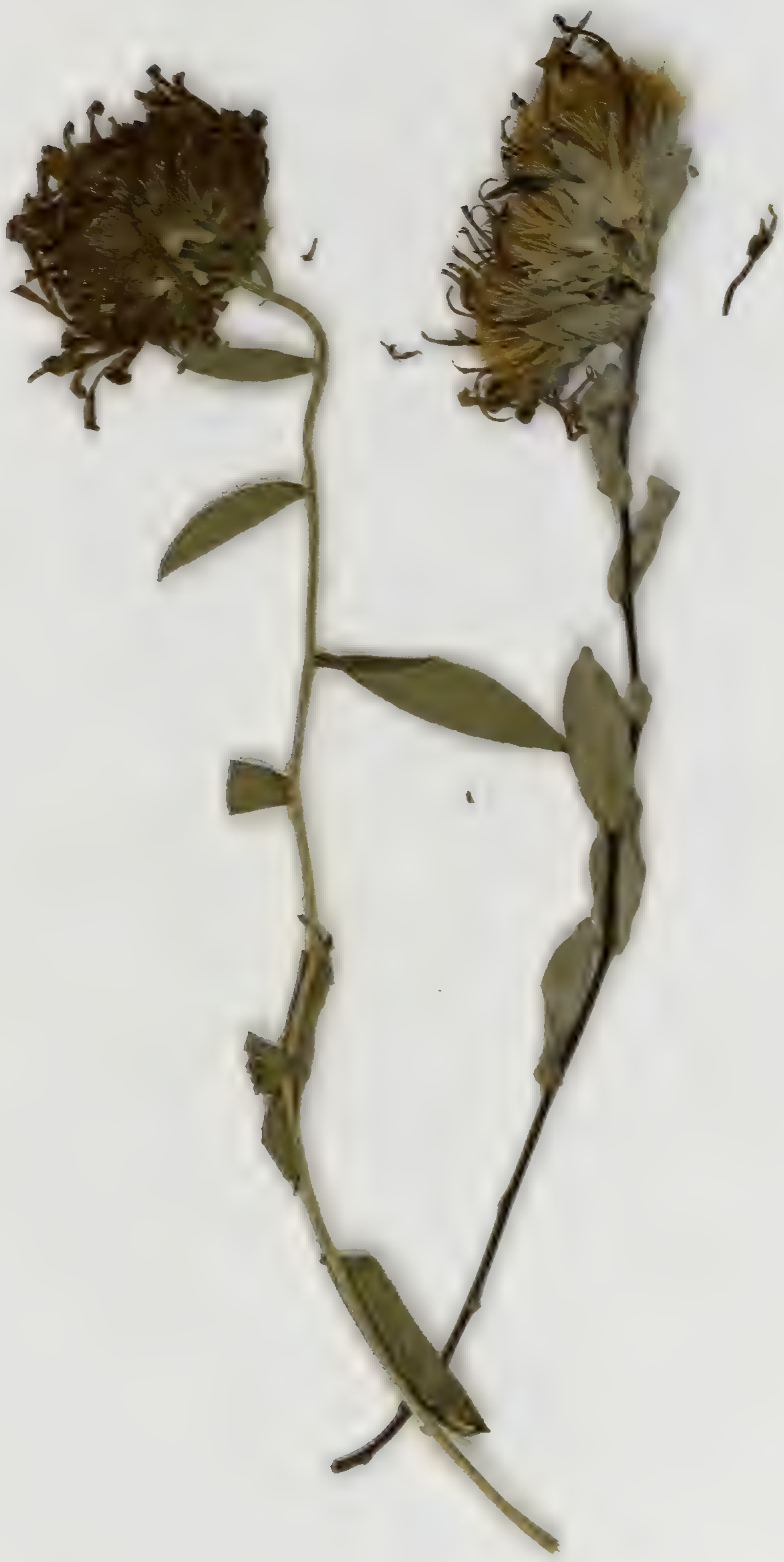

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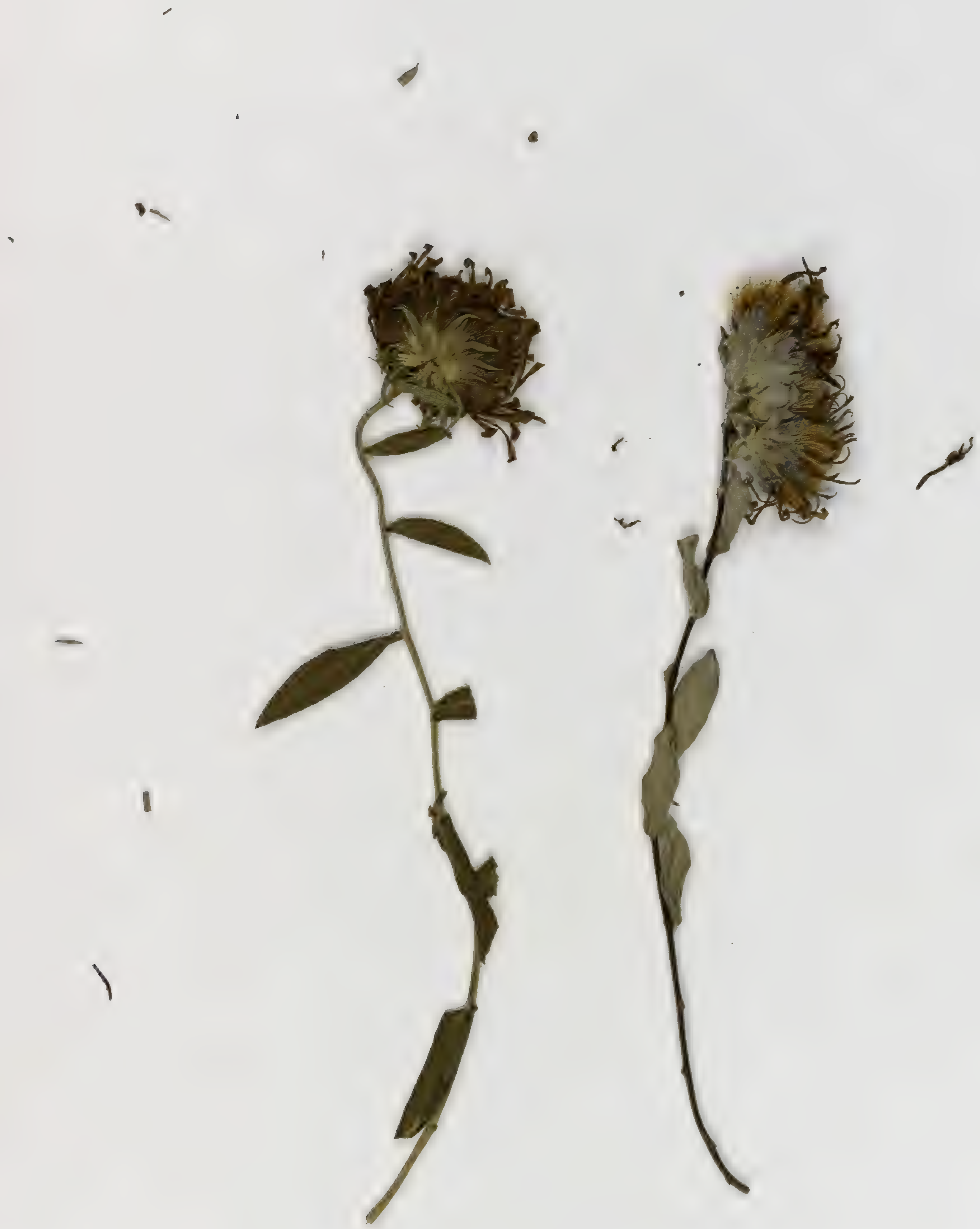

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Recd Oct 6

Pleasant Hill Mo. Oct 4-1865

Dr Engelmann

Dr Sir

On Saturday last Sept 3 - I noticed a beautiful meteor - in N.W. Its course was at an angle with vertical of about 10° - and Course ~~inclining to the~~ apparently towards Southwest - It appeared a few minutes past 9 A.M. appeared bright and shining with intense billiancy like heated metal and emitting sparks at the edges. No noise was heard and the duration of the Phenomenon was Scarcely a minute -

Yours Truly

G. C. Broadhead

Dalea alopecuroides

M CAL
GEORGE ENGELMANN PAPERS

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Pleasant Hill Mo January 1st 1866

Dr Engelmann

Dr Sir} I wrote a few days ago for certain Meteorological notes - It will not be necessary for you to send them as I have found as much as I need The following notes for several days past -

Dec — 27 — +10°
" 28 — +8°
29 — +10°
30 — +15°
31 — +20° at 4 PM at +15
Jany 1 at 8 AM at -2 -

On 16 Dec - 6 in Snow On 28 - 2 in Snow -
On 29 - 1½ in snow - On 30th - 1½ in snow -
On 31 - a little snow

Yrs Respectfully
G. C. Broadhead

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Recd 24 Apl

Pleasant Hill Mo - April 22 - 1866

Dr. Engelmann

Dr Sir -

Inclosed find plant - one of the earliest collected - on creek bottom - The following is calander of blooming thus far -

April 3 - Erythronium albidum, Capsella bursa pastoris
April 8 - Draba Caroliniana,
April 11 - Viola Cucullata, Dicentra cucullaria - Dentaria laciniata
Isopyrum biternatum, Astragalus Caryocarpus -
April 15 - V. stricta - April 17 V. delphinifolia
Troximon cuspidatum, Corydalis aurea, Uvularia perfoliata - April 19 - Plum, pear, Redbud
At present the apple is blooming & Redbud seems to be full in bloom -
Today, it is raining -

Yours
G. C. Broadhead

P.S. I believe that of those I collected last year I only wish specimens of Aster & Convolulacea - but would like a list of names so I could add to my previous Catalogue

GCB -

Ex [illegible]

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Pleasant Hill Mo May 13 - 1866

Rec'd May 15

Dr Engelmann

Dr Sir, Inclosed please find bloom of the small Oak less than 2 ft high - Also a Corydalis. The Corydalis seemed to abound here this season - has now about ceased to bloom — I also send another plant not heretofore collected —

I saw a young Colt this morning having only 3 legs - its left fore leg absent - only a short stump of about 2 inches protruding - which according to position of animal when it moves sometimes is scarcely apparent - Cannot discover any concealed entire limb - but there is an appearance of one point near the end of stump - It walks about —

Yr

G. C. Broadhead

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P. S. I send also two other plants not previously sent — one rosaceous

Recd Octob 6
Ans same day

Pleasant Hill Mo Oct 5th – 1866

Dr Engelmann

Dr Sir, Enclosed please find a white Lobelia — I think a var. of L. Siphilitica — I dug it up about 2 wks since — Planted it out is still living but somewhat withered – It was a beautiful entire white when first found –

Also a vine resembling hop – still I could hardly reconcile it – Also an Ambrosia resembling the A. artemisiaefolia – We have also a thicker leaved one – I sent you last year what is it also Also – a plant growing on Prairie roadside only seen between this & Harrisonville.

We had heavy frost 2 wks ago today – now weather is rather warm — Thermometer 76 –

Yrs G.C. Broadhead

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I am about digging an
icehouse - What is
the best way to wall
it up? - would stone
do? or should it be
brick - I am not
prepared for much expense

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Rec Dec 27
Ans Jan 2

Pleasant Hill Ind
Dec 26 — 66

Dr Engelmann

Dr Sir — If convenient Can you send me a Copy of such notes as I have furnished you concerning Thermometer & State of weather at this place — I cannot find my original notes

I wish them very soon

Weather very changeable recently — a few days ago warm & pleasant —

Today cold — a little snow in morning —

Last Sunday week we had 5 inches snow and good sleighing for several days

Yours truly
G. C. Broadhead

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Recd. Apl 29

Pleasant Hill Mo
April 26 - 1867

Dr. Engelman
Dr Sir

On 24th at 10 minutes before 3 P.M (Pacific Rail Road time) an Earthquake was felt here - I was on horseback at time and was not conscious of it: but every one in town nearly (who was in a house felt it - as shown by every one running out doors - several feeling it say it felt as if coming from the Northwest -

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Our Spring is backward
Days now rather cool –
last week mornings
were warm with southerly
breeze – afternoon wind
from North & No West.

April 2 – Erythronium albidum in bloom
" 15 – Claytonia – caroliniana
" 19 Viola cucullata & the
yellow violet
" Dicentra cucullaria
Isopyrum biternatum
" 20 – Strawberry in garden
24 Mertensia Virginica
25 Antennaria

The Plum is scarcely in
bloom

I expects to be down
soon

yours truly
G. C. Broadhead

Apl 27 – Thermometer at 35° a little after sunrise
ice in tub out doors
⅛ inch thick

Rec. March 19'

Pleasant Hill Mo
March 17 1867

Dr Engelmann

Dear Sir

Winter seems preparing to usurp place of Spring — On 14th March Thermometer at 7° below zero - Did you ever know it so cold as late in season — Some old settlers say that in 1843 we had very cold weather in March

Have you noticed the letter published in Mo. Republican from men in Illinois referring the Milk Sickness to Eupatorium ageratoides —. That plant is found everywhere in Mo — and in this neighborhood it abounds especially where my cows grazed mostly during last year yet they had no such sickness —

A man living in this neighborhood formerly from Illinois told me that he had seen cows & calves take the disease when he knew they had no chance to get any green herbage or hay — to have it when occupying dry weedless & grassless lots — I think the man must have made a mistake & shewn Dr Sander the wrong plant when he shewed him the E. ageratoides — yrs truly

G. C. Broadhead

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Meteorological Observations
Pleasant Hill Cass Co Mo: by G. C. Broadhead

1867 Month	Sunrise	9 AM	12	3 PM	6 PM	Remarks
Feby 1	29	32			36	
2	32					
3	32		42	49	48	Strong wind at night
4	31					
5						Pleasant
6	28	37				"
7					33	" windy
8	17	17		16	17	A little snow - N.W. wind
9	4	9				
10	13	38		57		
11	42	47		52		S. wind Smoky
12	42		56			
13		52			42	Evening rain last night
14	36		39	40		Drizzly and Rain
15					35	Rain in Morning
16	30	39		~~64~~	49	Sunshine
17	33			61		Windy ~ Sunshine
18	37	43				A.M. Sunshine P.M. cloudy
19	34				36	Some rain
20	34					Strong wind at night
21	7	13				Sunshine
22	21			50		Cloudy
23	30					Cold - Cloudy
24	15	20			21	Cloudy ~ cold
25	17	30		49		Sunshine
26	30				49	"
27	38					
28	46				58	Pleasant
March 1	57				34	
2	16					
3	22	28	25	29	26	
4	12	17				
6	28					Slight snow
7	24	29				
8	22			31		Slight snow last night - Snow P.M.
9	9					Pleasant
10						
11	22	24		46	30	A little Rain last night
12	28	38	28		14	4 in Snow
13	0	9	11			
14	7	+12			20	
15	+12	20	31	30	25	Snow at 3 PM - 2 in
~~16~~						a little snow
17	9			30	27	
18	22½	25½				Snow fast until 12 M.

G. C. Broadhead

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Rec= Jun 27

Pleasant Hill Mo - June 1867

Dr Engelmann

Dr Sir

Inclosed please find Talinum !! teretifolium (?) found in abundance on a Rocky limestone point about 1/4 mile from my house.

I have in my garden a very fine plant of white Delphinium - I had also the dark Blue - I have also a fine bed of Oenothera speciosa -

We have had plenty of grasshoppers (Locusts) but they have not done much harm & are now leaving -

Among my plants you have labeled Artemisia vulgaris - Gray in his description says Adv from Eu. & waste places around dwellings - now this plant does not grow in such localities but on wild & rather thin prairie - or near prairie roadsides

but not often near Roadsides —
There is a plant called wormseed
growing around dwellings which I
have seen — probably 2 species —
one of which is fragrant.

The Oenothera trifolia
I think ? I have found before
at Marshfield in Webster Co.

I find absent from my list
a plant (a specimen I believe I
have somewhere) of Orchid family —
greenish white flower — has grass like
or lily like leaves — Flower very peculiar
in construction — lipped I believe with
a long spur — have you it
recorded in your list — If so please
tell me what it is —

Yours truly

G. C. Broadhead

$1.25

Recd Nov 5

Pleasant Hill Nov 3, 1867

Dr Engelmann

D Sir Inclosed please find specimens of Lemna gathered a few days ago from a pond of still water — In August I collected some for you but it got lost — From 20th Sept to 8th Oct — no rain — Rain on 8th & 20 — none since — First frost on 23d Oct — slight — On 30th — heavy frost —

During last Summer my orchard was full of birds & in gathering apples I have found nests in nearly every tree — in some are several — among them I have found 3 or 4 Orchard Oreole nests — very ingenious things they are

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I happened to know them
from finding the young
during summer in one
The nest I saved but let
the birds go – since then
I found several empty
nests

I am yours &c

G. C. Broadhead

P.S. what is academy doing

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Rec Dec 18.
Ans Jan 7

Dec 14 —
Snow began
before Day
snow all day
15 — still
slightly snowing
on ground
6 & 7 inches
& drifted
thermometer
in morng 28
noon 34

Pleasant Hill Mo- Dec 13-1869

Dr Engelmann

Dr Sir } I am glad to hear of your return from Europe no doubt a very pleasant trip to you —

I send you a few plants collected during the last & previous Summer —

1 — Xanthium (may be var Echinatum?) or cockle burr collected 15 mls South of P-Hill & 3 ms N. of Austin in Cass Co growing on road side near a small prairie stream — it looks to me like a species I have from near Galveston Texas — I have never seen it before in this country — it may have been brought here by Texas Cattle.

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2 Next is a large Helianthus -
grows very tall 8 to 10 ft
resembles the common sp. often
cultivated - found in South part
of Cass co. in Bates & near
Ft Scott in Kansas - the
Specimen I send is from
5 ms. N. of Ft Scott -

(3) Next is a pretty yellow
composite plant - petals are
quite shining Collected by
myself last of August
near Little Osage River -
in Kansas near Mo. State
line (may be Chrysopsis?)

(4) next we have a composite
somewhat like an Actinomeris
from near Ft Scott Kansas
grows only on limestone glades
about 6 to 5 ft high & very
~~thickly~~ dense patches

(5) Is a very pretty purplish
flower collected on South
Fork of Sangamon River
Christian co Ill - early in Sept. 1868

I found it this summer on
bottoms of Marmaton River
Vernon co Mo — I have
never seen it in Cass co —
but I have observed it in S.E. Mo
resembles Eupatorium — may be Conoclinium

6 — A bright yellow Composite
flower — collected in June 1868
on Post oak flats Fayette
co — Ile —

7 — Trilobate leaves from
shaded hill sides Bond Co. Ile

8 — Dodecatheon — flowers white
found in Fayette & Bond cos
Ile — May 1868 —

9 — Leaf of a very pretty vine
from Nevada Vernon co. Mo

10 — Leaf from small cherry tree
Nevada Mo — may be choke cherry?
if so I have not before seen
it farther South than 40
miles N. of P. Hills —

11 — from Shelby co — Ile —
July 1869

I have grapes leaves & grapes
gathered green & withered
from Vernon co Mo-
gathered last of Augst - yet green
but very large - may be
labrusca - vines do not seem
to climb very high, growing
mostly on black Jack &
post oak sandy slopes -
said to be very delicious -
among them I found a gall
size & shape of a crab apple.
On Marais des Cygnes in Bates co-
observed Trumpet creeper (Tecoma
radicans) Further north I have
seen it near Boonville & N.E,
but nowhere west of that limit.
On L. Osage in Vernon co
observed red birds - next point
where I have observed it is on
Flat creek Saline co & thence
North Eastwardly - On Bottoms
of Marais des Cygnes the
grass is very tall & among

it in many places on prairies the Phyzostegia virginiana I found very abundant & looking very pretty — Off a little distance noticed dense patches of a tall canelike looking grass generally reaching 8 or 10 ft or even more in height its top branched out all around like common corn I intended to collect some but thought I would do so on my return but I returned a different way — The same grass I have found in Nodaway co Mo. & Piatt co. Ill. generally growing in marshy ground. its stem is sometimes 3/4 inch in diameter —

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I have a pet bug in a bottle
of water which has
interested me somewhat
It resembles one figured
and described in Nat-His
of N. York as Disticus Harrisi
but I do not if it is that
it was pumped out of a
cistern, is quite pretty,
& remains generally near
bottom of water - inclining
at an angle of about
45 degrees head down - I change
the water every few days.
Sometime ago I sent a paper
to Spencer Smith requesting
him to read it before Academy
of Science it was on fossil
horse found in Mo - Did he
present the paper - I havent
heard -

I am yours truly
G. C. Broadhead

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June 6-1870

Dr Engelmann

4723 / 711

In the inclosed you
will find a plant found
by me near the garden of a
gentleman of [illegible] [illegible]
[illegible] [illegible] He brought
the [illegible] from Montana
[illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] in Montana
[illegible] [illegible] [illegible]
[illegible] [illegible] [illegible]
[illegible] [illegible]
[illegible] [illegible] [illegible]
a [illegible] [illegible]

[illegible]

Dr Weber: [illegible] fide ist M. Hävernickii (Namen bei Pfersdorff)
the Echi. Pfersdorffii ? Plant or

Ech. Gerardii Weber

Pil. fossulat.,
Dautwitzii
Houlletianus, wer!?
Hoppenstedtii
Altensteinii

Pil. Williamsii Cels Gard.

Cer. lygeomorphus ubi!
Echinocer. Bertinii Cels
Cer. Martinii in Hort. Kew
Phyllocactus [illegible] Lemaire in Hort. ~~Munich~~ Kew
(= crenatus ?).
Cer. Martinii (where?)
Pil. Cer. Chiotilla Weber non gemmatus
quintercuis
Echinocer. Bertinii Cels
Cer. ater [illegible] [illegible] said by Weber to be
= C. Thurberi

Eichler: Karwinskii Phyll. Ackermanni in Arad & Mart. differt.

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Rec'd Oct 18
Ans — 19

[illegible]

Pleasant Hill Mo Oct 17 1870

Dr Engelmann

Dear Sir The wet weather consequent to the exceeding dry summer has brought out several plants not common I believe at this season. Now I generally see the viola cucullata abounding in early spring and again see it in latter part of Oct, & in Nov — With it has now appeared in full blossom the Viola delphinifolia, and an occasional Allium striatum is seen in bloom also the yellow Oxalis — But few others adorn our prairies just now occasionally the Gentiana puberula partially hidden in prairie grass & Gerardia tenuifolia —

I must not forget to mention that I also saw in bloom during last week a plant of Oenothera speciosa! ——

The Menispermous plant I sent you last winter as having found in Vernon Co - I have since found in Cole Co - suppose it to be Cocculus

In July & August I was through Cole Co & noticed many plants differing from ours including a showy phlox growing along margins of streams the same I think that is often cultivated also a pink colored Sabbatia & a Silene growing on barrens near lead mines -

On these barrens I find the Silphium terebinthinaceum abounding — In no ~~similar~~ other kinds of ground have I found it in Mo but ~~throughout~~ South Mo— on barrens, whereas in Illinois I find it in Macon Piatt, Sangamon & Christian counties growing on rich prairies —

I send you a sp. of the phlox (*paniculata?*) also sp. of a plant growing on damp ground with a small white flower resembling an *Ammannia* & a poor sp. of the ~~Silele~~ *Silene* & *Sabbatia* & a Dipteracanthus — smaller flower than the *ciliata* growing here — all from Cole co

I am

Yrs truly

G. C. Broadhead

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Rec'd April 19
Ans — 20

Pleasant Hill Mo April 16 1871

Dr Engelmann }
Dr Sir } I inclose you specimens of Anemone Carolinianum, white & purple procured from Southern part of this county, & from Bates co I also send you by mail in another package, the top & part of stem of a reed I collected last year at Grand Pass Saline co — in a marsh, its general height about 8 feet high. The same reed or grass I saw growing 2 years ago on Marais des Cygne Bates co & I have also seen it growing in wet places in Piatt co. Ill & Nodaway co Mo — Wrapped with it is a green bunch of grass found growing in fields 6 miles South of this & Southwardly but have not seen North. It has remained green during the winter — standing thick in some fields, (looking like a blue grass pasture) One man informed me that he had only seen it once before. Another, an old settler, said he had never seen it before. One informed me that it would die down in May. During Winter it lay scattered over fields appressed to the ground — is now more luxuriant.

The night of 9th ice was formed on vessels out of doors near a ¼ inch thick, the wind was very strong during night as it had been for several days — Our fruit was not injured — Peach crop looks well.
The following is Floral Calendar thus far

March 19th Apricot in bloom — (35 miles South I observed in bloom Anemone Caroliniana, Claytonia ~~Ery~~ Erythronium)

March 19. Capsella bursa pastoris
23 Isopyrum biternatum, Erythronium albidum
Viola cucullata, Antennaria , Claytonia Caroliniana
31 Peach
April 4. Viola stricta, Allium striatum, wild strawberry
Plum and dwarf pear
6 — Ranunculus repens, Cercis Canadensis.
7 — Dentaria laciniata, Collinsia Verna
Mertensia Virginica, Taraxicum dens-leonis, Crataegus tomentosa
9 — Lithospermum canescens, Astragalus caryocarpus, Geum vernum.
12 — Viola delphinifolia
14 — Troximon cuspidatum, Astragalus distortus
Cerastium nutans, Phlox divaricata
16 — Polemonium reptans, Delphinium azureum
Oxalis violacea

Yrs truly
G. C. Broadhead

Recd May 2d
Ans same day

Apogon humilis Ell

Pleasant Hill Mo- April 30 - 1871

Dr Engelmann

Dr Sir- I made a slight mistake in my last to you - The Claytonia should have been C. Virginica - It was an error in my pen I suppose or my mind happened to dwell on the other sp. at the time - Did I understand you to say that the purple Anemone is A. stellata? & the white the A. Caroliniana? - I send you a little Plantago not before noticed by me although it seems very common - also a small Taraxicum (?) not described in Gray. I found it 20 miles South - What was the little Umbellifera I sent you last - I can send you Astragalus distortus & A. caryocarpus, both if you wish in living plants - but I have planted them both out at various times but have never succeeded in raising them If you prefer I can send seed when ripe - Just South of Grand River in Bates co I find Trillium sessile - not found here - I send you a white var. of Phlox divaricata collected on Grand River bottoms

Broadhead

I have collected at various times recently & during past year some interesting fossils from Coal meas. rocks also minerals — in this vicinity some beautiful needle shaped crystals of calcite as well as other interesting varieties

The Railroad Excavations have developed to me these hidden beauties — I have a nautilus from a quarry near this place which is one foot across the disk — Also fragments of sigillariae — some showing attached branchless spines or leaves a foot long —

Do you know what the Mining Bureau will do? I thought that the Governor was inclined to remove Hager —

Now I would urge nothing against him — If his work is good he ought to be retained — If he is removed ~~then~~ no one but former members of Survey should be appointed in his place — In that emergency — I would like an opportunity to secure the first position but would not oppose the appointment of any other member of former survey — but would oppose any outsider

Yours truly

G. C. Broadhead

Missouri ...
GEORGE ENGELMANN Papers

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Recd Aug 14th
Ans Same day

Pleasant Hill Mo Augt 10-1871

Dr Engelmann Dr Sir,

It was not in my power to procure any more specimens of Corydalis crystallina In June I visited a locality about 15 miles South of this where I had seen some growing in May but could find none — nor have I been to the locality of Collinsia The Collinsia violacea is very abundant about 3 or 4 miles South of Butler in Bates co. Have not seen it north of that nor have I seen it abundant south — I send a few seed of it dried in press — I find in 2d Geol. Survey of Ark, in list of plants of that state the name Collinsonia violacea — is it same as Collinsia v.

I will try next spring to get you some plants & seed of C. verna.
During last month being at Leavenworth - I collected on limestone slopes along R.R. meado. Missouri River bottom a good many plants of Cleome integrifolia — but let them spoil in press - I send one - Do you suppose they escaped from some ones garden? Those I saw last summer opposite Kansas city of which I sent you specimens at time grew in garden & seed were brought from Montana - This summer I have seen them at same place growing up from same spot without any planting of seeds by man.

I send you a prickly plant with yellow flowers found growing on road sides

Solanum rostratum
here - looks as if it might
be related to Solanum but
I cannot find it in Gray -

I saw a Dahlia a
few days ago some flowers
white - rest red - On
some flowers petals where whitish
at end & reddish at base -
I have also seen a Verbena
all flowers white - except
one flower with one sup.
purple petal —

Is this a good time to
propagate woody plants by
cuttings? -

Next week the Am. Ass'n
for Adv. Sci - meets at Indianapolis
on 16 - I think somewhat of
going - but doubtful - St Louis ought to have
a delegation there - & try & secure
a meeting at that place next -
year

G. C. Broadhead

I must tell you about my Talinum - I found a good large bed near here - put some in a pot - and by watering it it continues to bloom - Opens between 2 & 3 o'clk P.M. sometimes as early as 2¼ - and closes between 6 o'clock & sundown - (Talinum teretifolium)

I notice very abundant along Road sides here the Salvia — not described in Gray — I believe you labelled it S. trichostemoides

Ans. Aug 24

Pleasant Hill Mo Aug 23-1871

Dr Engelmann

Dr Sir — I send you a plant resembling Silphium integrifolium but description of stem does not agree —

I did not go to Indianapolis on account of sickness —

Prof. Hager has desired me to work in Mo. Geo. Survey — but the Board has made no appropriation for it — still he says that I could if I chose go on and work & wait for board to make appropriation afterwards — that seems rather uncertain — I would like very much to go to work — Do you know whether they will retain Hager? I know there was an effort to remove him —

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I got a letter from Maj.
F Haven of Leavenworth
in which he says that
"In 1848 an English gentleman
gave him seed of Cleome &
of a Euphorbia (the latter a
native of Kansas plains)" He
cultivated them a year or
two & then abandoned them
The Euphorbia spread in the
lanes not so the Cleome -
Maj Haven also says that in
1859 he found the Cleome
very abundant near
Ft Kearney

Yrs

J. C. Brodhead

1865

Recd Jan 3d - 1872
Ans — 4

Columbia Mo - Dec 31 - 1871

Dr Engelmann

Dr Sir In passing through St Louis a few days ago - I called at your office but you were out - I left a package of plants collected in S.E. Mo - in charge of Bar Keeper below - I suppose he gave them to you he said he would - I shall be here some time - probably a month. Mr Pumpelly has not yet arrived - I do not know whether he will want me to continue in survey

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I suppose the Board
can regulate that -
Still he has a voice
in the matter -
I would like to
Continue -

I am
Yours truly

G. C. Broadhead

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Rec'd April 23
Ans May 9

Pleasant Hill Mo Apl 22-1872

Dr Engelmann

Dr Sir When looking at Botanical Collection at Columbia Prof. Pumpelly expressed a willingness ~~that~~ you should undertake to work up the Botany - but did not think the collection scarcely large enough to justify placing them in any ones hands - If you should undertake it - you can if you wish use my collection but I believe you have already seen all I collected here - or have duplicate specimens of same -

I do not suppose I have over 4 or 500 species of my own -

I wish we could
collect specimens this
summer but it will
be scarcely possible
I shall be in the field
in a few days -- will
work up N. W. Mo - along
lines of different R. Roads
also on Pacific & M.K.&T.RR

Hope you will have
an opportunity to make
something out of the old
State Collection

Yours truly
G. C. Broadhead

P.S. If the academy should
conclude to publish anything
this summer I might
furnish a few articles

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Rec May 14
ans June 17

Pleasant Hill Mo
May 12 - 1872

Dr Engelmann

Dr Sir — yours rec'd — Prof Pumpelly I presume is in St Louis — his office is at Washington University — now the Head-quarters of Survey — He has not provided for collecting Botanical Specimens this year — It might be well for you to see him — Travelling as I do I cannot well make such collections — I am working in N. W. Mo — Start back for St Joseph in a few days

From 1st opening of flowers the advance of Spring has been very rapid with us - I think unusually so -

This morning I saw and heard a Southern Mocking bird singing from a tall tree in my yard - Last year I heard them here for the first time -

All is quiet here Cass - Co - is and has been as orderly & law abiding as any county in the State The Kansas city papers lie concerning us most wilfully

Yours
G. C. Broadhead

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Rec'd July 3d
An— 5

6-25

spartea .III

Pleasant Hill Mo - July 1 - 1872

Dr Engelmann

Dr Sir — yours of 16th rec'd The Pentstemon grandiflorus, I only found 1 plant, The Oenothera serrulata also only found at one place. The Yucca angustifolia abounds on bluff hills E. of Nishnebotna Riv in Atchison Co & extends into N. part of Holt. Did not find it East of that line — I should have observed it more carefully but thought at the time that it was the common kind we have in many yards here & only found it was different when I came home & saw the others — and have not been in that neighborhood since — If you should desire them very much I can suggest the

I send you a grass & Rush gathered on open prairie in Northern part of Holt county — Spear attached to seed as you perceive is twisted on drying name of a gentleman in Atchison co - who might send you some plants - He is a physician & might assist another Physician I do not know whether he has any taste for Botany - It is Dr. Moore living 4 ms. N.E. of Watson Station - I suppose that is his P.O. He lives also 3 ms N.W. of Linden - & about 3 or 4 S.E. of Hamburgh the latter Place in Iowa -

Some time ago I sent you another package from Forest city containing an Anemone, Vicia and a grape - the latter with small leaves growing on bare hillsides (limestone generally) ripening I believe in August - berry small The Anemone I have found all along the Mo bottoms from near St Charles up - but not in interior except in Atchison & Holt

yours truly G. C. Broadhead

Rec Dec 26

Pleasant Hill Mo
Dec 23 1872

Dr Engelmann Dr Sir

Yours of 12th inst recd. I was in St Louis 2 weeks ago but failed to see you. I was very busy whilst there and since I have returned home have been kept constantly engaged in writing up my Reports. Hope I will see you when next in St Louis — expect to be there during January some time. I have made no botanical collections since I last wrote you.

The grape I sent you I have since found on my grounds at this place

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seems to ripen irregularly - some dry up before others have changed their color - & these I found here were not very pleasantly tasted - a slight bitter taste was apparent.

The diameter of the "circular works" seen in Saline co - is 300 yds in longest diameter & 20° N mag. Brushes too thick to measure in the other direction but not quite as much. I thought I inserted it in letter sent -

Article on Fossil Horse in Kansas read before Acad. Sc. St Louis Nov 15 - 1869 - was pub. in Am. Naturalist March 1870 - & credited to Acad. Sc. An. Article on Quaternary Deposits &c Read Jany 1870 before Acad. Sc. & pub. American Naturalist

March 1870 - were also
credited to Academy of
Science when published
~~One of these~~ Extracts from
one of the articles were
published in Eclectic Monthly
I will note the rings of
trees you speak of when
occasion permits - I have
observed some curious freaks in
lightning during last season - One
tree a hickory was torn at the
root and a short distance
above ground - Another tree
the kind I do not remember
was struck on outer branches
from top to bottom & the
trunk untouched - outer ends of
branches on one side all
killed -

I am glad to see
the move towards buildings

Hope the plan will be successful & that ere long the Academy will have a good hall & be otherwise well supported

Yours Truly

G. C. Broadhead

Thermometer below Zero all day today —3 at 4 P.M.

Tuesday morning before sunrise — 19°—
at 7h 30 AM at —17, at 9 AM — 9° —
clear cold — [illegible] — N—

At one Place 1½ miles S W —21
at 1½ ms S E —18

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nw. Missouri 1872

1 – Grass on Rocky Mountain sides – 6 ft high
Andropogon

2 . purple flower small – Lespedeza repens & procumbens

3 . Small yellow flowers Leguminosae – Stylosanthes elatior

4 – Houstonia angustifolia Mx

5 . Yellow flower Hieracium Gronovii

6 Phlox aristata

7 – Rough seeds – washes near creek Heliotrop indicum

8 – Yellow Gerardia pedicularia

9 – Bearberry (vaccinium) grows on Elevated mountain sides

10 . Huckleberry (vaccinium)

11 – Red maple

12 – High Huckleberry – vaccinium arboreum berry unpleasant! –

13 – White Lobelia Syphilitica –

Rhamnus Carol.

14 – Bush with berries like wild cherry, Rhamnus caroliniana

15 Smooth rose – Edge of water rosa rubifolia

16 – Pine P. mitis

17 Aster

18 – Rough rose – low ground Rosa Carolina L

19 – Plant top of Sand stone ridge with flaglike leaves Agave virg

20 – white plant ~~Antennaria~~ margaritacea

21 – called bush Honeysuckle
Azalea

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- 22 - Mentha ~~Pycnanthemum~~ Lycopus

, 23 Plant from rocky banks of creek Elephantopus Carol

, 24 in Brush 4 ft high Viburnum Dentatum

Madison co Mo-

The pine abounds especially in Southern part of the county-

Hammelis virginiana, Alnus serrulata, Nyssa multiflora, Ulmus alata, Cornus florida, Sassafras abound throughout, Liquidambar Styraciflua not found in N. part of county, but abundant in S.½. A few trees of poplar or tulip tree ~~Are~~ found near South county line. Beech reported at one place in S.E. part of County East of Castor. Leatherwood (Dirca palustris) on Leatherwood creek & on Castor near Marquand-

Rec Aug 7
Ans Sept 18

Pleasant-Hill Mo
August 5 = 1873

Dr Engelmann:-

Dr Sir - I left a few plants with Mr Caldwell in our rooms at Washington Univ. requesting him to take to you - I suppose you have them by this time - Those I left there about July 4th were many spoiled - not dry enough. I have other duplicates & some a good many of most Sp. The following is the result in part of my Botanical Obs, from Cass to Jasper county - on the border

Pecan first seen on Marais des cygne - abounds on Osage - L. Osage & Marmaton & is seen on Dry wood near its mo- not seen in other places -

Red or Black birch Birch in Eastern & southern portion of Bates Co. & on all streams S.

Trumpet creeper the same as last -

Sabbatia Angularis first seen in S.E. part of Vernon & South

Benzoin Odoriferum (spice bush) first observed S.E. part of Vernon, next in S.W. part of Barton & South & East

Black Jack. Post O. & Black Hickory begin to be common in South part of Bates but not so common as farther South

In Barton they are the
principal trees everywhere
White oak occasionally seen
in Cass - not seen in Bates
Only seen in South East part
of Vernon - more common
in Barton -

Brasenia peltata - only observed in
Ponds in Barton Co. Nymphaea
odorata only found in Vernon
& Barton but very common
Nuphar advena - in Bates
Vernon & Barton
Callirhoe digitata - not found
North of Jasper - is common on
Limestone soil in Jasper -
Prunus chica - have not seen
in Cass - is found South
Spiraea opulifolia - first
observed in Eastern part

of Vernon & South
Amelanchier Canadensis
more common South –
Oenothera speciosa – from
Jackson co. South –
O. missouriensis – observed on
limestone slope in Bates co
formerly saw it in Lawrence
& Greene counties.
Silphium laciniatum – observed
plane of leaves pointing N & S. in Bates
& Vernon – always closely observed
but never detected it before.

I shall go through
Jasper & then Cedar co –

yrs truly
G. C. Broadhead

Rec May 26
Ans same day

Pleasant Hill Mo May 25 — 75 —

Dr Engelmann

Dr Sir I send you the first grape bloom — grows in my yard — The grasshoppers have destroyed all my grass in yard — & meadows look like a dry road — Corn is bit off as fast as it appears above ground — So at this time there is none in sight — Now they begin to attack fruit climb apple trees Gooseberrys and currant already destroyed & no strawberries Cherrys peaches raspberries & plums all come in for a share of destruction

I will send more grapes of next kind

Yours
G. C. Broadhead

G. C. Broadhead,
State Geologist.
Missouri Geological Survey,
Office in Washington University,
St. Louis, Mo., ...18

I would add that the evidences are that this has been the hardest winter on shrubbery & grass known - There will be but little wheat raised mostly killed by cold & since eat-off by grasshoppers - [illegible] Meadows were also many killed in winter & there seem to be more dead limbs on trees than usual - Roses generally killed - also raspberries, many gooseberry & grape vines were killed also ———

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Rec'd Aug 12
ans Sept 1

Pleasant Hill Mo — August 10 — 1875

Dr Engelmann Dr Sir I send you 6 Sp. of grass —

1 — I think is similar to a specimen sent you 2 yrs ago

2 — Resembles Red top

3 — Said to be like Buffalo grass or bunch grass of plains

4 —

5 Crab grass

Nos 2, 4 & 5 grow from bunch & spread flat on ground all around

These grasses I collected in what has formerly & is mostly now a blue grass pasture

These grasses except 5 have never been common here before but in pastures where grasshoppers have eaten bare are now often very abundant, no 3 never was seen here before — and in places is very abundant — not blooming yet.

St. Louis, Mo., ...18
Office in Washington University,
Missouri Geological Survey,
G. C. Broadhead,
State Geologist.

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The grasshopper visitation has affected marked changes in vegitation. At the time of their departure there were not much over a half dozen plants growing unmolested — among them I would name the asclepias (sullivantii? or Cornuti?) Vernonia noveboracensis, Apocynum cannabinum and Ipomaea pandurata. None of these did they touch excepting the first & that only a little — when leaves were broken off & wilted a little they would eat them. The Salvia Trichostemmoides was just begining to grow by roadsides — they did not disturb it — now it has grown thickly over the surface in all places formerly occupied by dog fennell — / The first weeds that spring up next were common purslane & pigweed (Amaranthus) — The Purslane (Portulacca) abundant on waste places in yards in fields every where — never saw so much before —

Rec' Aug 6th Pleasant Hill Mo Sept 2-1875

Dr Engelmann [illegible]

Dr Sir

The grasses Nos 2 & 4 that I sent you I have seen since I recd your letter & am surprised I did not observe that both were old acquaintances but the reason is I have heretofore been accustomed to seeing them trampled under foot in paths & roadside. But in these specimens I found them growing luxuriantly in the pasture No 2 especially growing up tall two feet high often & thick like a hay field — in fact it is so luxuriant it resembles "redtop" — and is quite a pretty grass. For past two months rains have been so frequent & seeds of many weeds & plants so rare that those that sprouted have had a good chance to grow. In many places now even on river bottoms we find no weeds growing even for acres — the dry weather

G. C. Broadhead, State Geologist.
Missouri Geological Survey,
Office in Washington University,
St. Louis, Mo., ...18

of last year & more especially the grasshoppers eating off first plants leave nothing to sprout - We have no grapes this year so I could not supply you with blooms - no wild grapes in any of country between this & Jefferson city - & I have been in all those counties in many places - When in Bates county last week I observed the common upland Prairie grass standing thick for miles level with my nose & in many places it was way above my head - I have not seen such a growth of grass for years There is now in an agricultural store in town a grass stem 24 feet long - taken off of bottom prairie - It seems to have little roots at each joint - resembles Spartina or Tripsacum - Would either grow in that manner, I am intending to visit the locality it came from 4 or 5 miles away - they propose to send it to Centennial ——

those fossil woods you refer to all belong to Coal measures — I am confident. One the brownish looking is from N.W. part of Barton Co — near State line At that place I observed several large stumps of it in a position where it certainly would be referred to Coal measures. The black from Howard county is from a black shale bed over coal. Another rather imperfect looking I obtained from a Coal measure sandstone in Adair County — I have also obtained specimens from Illinois from shale beds of Coal measures enclosed in shales — of which I have 2 specimens here one from Montgomery co — & another from Effingham County

St. Louis, Mo., 18

Office in Washington University,

Missouri Geological Survey,

G. C. Broadhead,
State Geologist.

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If you will examine
Prof J. W. Dawson's work -
"Acadian Geology" you will
find more about these
coniferous woods of Coal
Measures than in any other
work I know of - If you
have not it - you may find
it in Academy Library or
that of Mercantile Lib.

I had heard of this
meteorite 6 months ago but
only recently got on track
of it - a small piece was
sent me - I inclosed a fragment
to Prof. J Lawrence Smith of Louisville
Ky - the authority on Meteorites & he
immediately wrote back for all
he could get - so I immediately
started for it - I intend giving him
a piece - Smithsonian also
& Academy Science - It is a very
irregular mass with a pitted surface
& very hard - was plowing up in
field 8 miles SW. of Butler Bates
Co - the only one certainly known to
belong to Mo -

In 1862 Dr Shumard I find reported
to Academy & was publ. in proceed.
also in Am. Journal Sc. & Arts. same
year, the falling of a piece of
iron in St Louis - but as no
nickel could be discovered in
it he doubted its being a Meteorite
It also rebounded on striking the
floor of Mr Riggins office -
If a Meteorite, I think it
would have passed through

I am
yours truly
G C Broadhead

I maybe in St Louis
in a few weeks

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Rec May 1st

Pleasant Hill Mo
Apl 30 1871.

Dr Engelmann,

Dr Sir I was in St Louis a week ago yesterday but very busy - on that day I packed & sent off Everything only 2 more pieces of trees to - I had been spoken to to go on & finish the collection & did expect to go there & was even written to by Sec - to come down for that purpose - Now, comes the Pres. & says no more to incur any Expenses so they will have to get parties there to assist Gray in fixing collection - I am afraid ~~that~~ much will not be arranged as it ought

I was glad to receive your letter — If Prof Dawson would wish other pieces of Coniferous wood it is probable that I have others he would be interested in

If you have finished with could you oblige by sending my 2 pamphlets to Dawson
I expect to go to Phila. probably soon after 10th — but will not stay long —

We had another Meteor Apl. 27 at 10½ PM seen by Dr A. O'Connor & O. Kolstad of this place Appearing in N.E. passed over N.W. at an Elev. of 45° — vanishing in N.W. but just before something streakes like a rocket described as very bright & luminous —

Yours truly
G. C. Broadhead

sent you copy of art — on Forestry & on Meteorite with corrections —

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Rec Dec 25th

Pleasant Hill Mo Dec 23-1876

Dr Engelmann Dr Sir

The Pamphlets were safely rec'd — for which many thanks. The weather has been such that I have had no opportunity to look after the Hickorys, but I secured a few Acorns of Q. prinus — I did expect to be down in St Louis before this but sickness of family prevented — If I can I may be down next week — otherwise will not be down this winter —

On night of 15th — we had a remarkable change in weather here — During afternoon air was pleasant — wind SW — about ½ past 8 PM wind was round in North & blowing a

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very strong gale — this continued at least a ½ hour & much wind all night — clouds of dust were swept off & next day roads were all very smooth — From being pleasant day before we waked on 16th — & found it quite cool — Thermometer at 5° above zero —

On night of 21st Dec at 8h 15 P.M. a meteor was seen here passing off to East giving a light much brighter than the moon — which was shining at the time — Some accounts say it emitted sparks just previous to its disappearance — which was near Horizon — duration over a minute — I did not see it — but have conversed with over a half dozen who did see it — It was seen 3 ms. N. also 12 miles West — also at Kansas city & at Lawrence Kansas I heard nothing further

I gave you an account last winter of growth season of previous year — There were some plants you remember which abounded more than formerly —

Note

I have mislaid your letter concerning name of those fossil Coniferae as determined by Dr Dawson. If convenient can you let me know again & I will record it immediately so as not to forget.

Yours

G. C. Broadhead

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where Potatoes have been raised in early season – In a blue grass pasture I have it abounds in many places so that cattle leave such spots – dont seem to like it – Even in the woods it grew thick & very luxuriant. Those 2 species of Eragrostis so abundant in 1875 are scarcely seen – they have again retreated to their former diminutive size instead of the luxuriance of last year

With regard to var. of plants, I have thought a good deal since you mentioned about the Hickory – We know that under domestication most or all plants present varieties of form. Take Indian corn (all of same species) & look at what a great var. there is and plant a certain seed it will next year produce same kind – also the potatoe & the apple – the peach & almost any thing that is produced on the farm or in the garden –

Previous to advent of Grasshoppers here the Mullin, Pokeweed & Solanum carolinense did not abound here although they all grew here other vegetation being destroyed they sprouted up everywhere & again this year they are very abundant. The Poke (Phytolacca) I find almost everywhere. Often find them growing alongside of Grapevines so as almost to mistake the fruit. The Setaria glauca is another a grass which we have always had here & sometimes a good deal of it but no serious impediment to other growth. This year it abounds everywhere — in yards, in the garden, Growing thick as a meadow

Farmers are aware of all these varieties. We have white, and yellow, & Red, & Popcorn & Sugar corn - now how many species are contained among those - It may be we have 2 species of yellow & their intermediate varieties but probable only one - & of the white all varieties might be reduced to one or not over 2 - & popcorn may be another species - It differs from most of the above in a constant character - generally 4 to 6 ears on stalk - small grain & when dry will pop when placed in a heated place, these characters are not possessed by

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the others - The Sugar Corn differs in manner of growth of plant as well as grain all the other kinds raised are alike in general form of plant but only differ in size of ear, form & color of grain But I have planted only red corn & from it raised dark red & also speckled red & ~~white~~ yellow as well as yellow - These ~~had~~ no opportunity to mix during that season - but may follow law of alternate generation Now there are at least a half dozen varieties of Shellbark Hickory of large kind - also of small species and as far as I know, these several trees bear same kind of nut every year - A man was here not long ago with a load of Pecans from Vernon co He showed one having a peculiar ridge on it - stated that all on that tree had such ridges. It is probable this is a persistent feature for every year - &c &c

Yours G. C. Broadhead

Rec^d June 4th
Ans — 6th

Pleasant Hill Mo,
June 2 — 1877

Dr Engelmann

Dr Sir — By Express

I send you a box with a sec. of Quercus prinus Castanea (?) about 10 in diam — cut from at ground tree probably 30 feet high Leaves with it — from another tree about same size growing from same stump. I also send leaves of several trees of same sp.: one with some bark. These trees grow here to a foot or more diameter & 40 feet high. near Mo. River grow higher — but here is more of a prairie country & of course all upland trees are rather small

you observe the rings of
growth are distinct &
apparently faster growth
than white oak.

I also send a piece
of wood of Q. prinoides(?)
tree about 8 feet high
Also a sprout growing on
its stump - The tree was
cut down last winter
Leaves also from another
growing from same root
& about same height
Leaves also from other
trees growing near - all
on Limestone bluff -
West hill side - some of
them are 15 feet high
but generally about 8 ft.
a small twig of another
2 ft high - several grew
from same root & they
often do -. It may be
because of being cut off

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when young but may
be peculiar — not enough
here to determine that
but I have seen same
feature at other places
Of all these several
varieties of which I
send you there seems
a blending — The leaves
of the 2. sp. Castanea?
are often quite downy
underneath & absolutely
rounded instead of
pointed at ~~Extremity~~
I also send acorns
& leaves pulled last
winter off of the
small oak — I was
very busy or at proper
time I should have
collected flowers from
same trees — they have
now dropped — I hope
I have not kept you

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Missouri Botanical Garden

waiting too long - for
I had not forgotten it
but I rather put it off
On night of May 28th at
8½ P.M. I observed an
Aurora here extending
probably 35 to 40° - Elev &
across the N. horizon as much
as probably for 60 degrees
I noticed it at times &
now I see it was also
observed at Albany & Boston
You can if you choose
mention the fact to Academy
I have now out a plenty
going in my Garden, Penstemon
Speciosa, Verbena aubletia (very fine)
Delphinium tricorne & D. azureum,
Viola (3 sp.) Thalictrum, Aquilegia,
Tradescantia, Lithospermum, Arisae-
ma, Uvularia & last year I planted
a Gentiana puberula which I
am glad to see has sprouted,
also a Lilium —
I am yours Truly
G. C. Broadhead

Rec Febr 19

Pleasant Hill Mo
Feby 17 1878

Dr Engelmann
Dr Sir

Your valuable papers on Oaks, Junipers, Firs &c recd for which I am indeed much obliged. I really do not believe that I have ever furnished you with full sets of the species of oaks here. They are [illegible] specimens [illegible] you [illegible] [illegible] [illegible] I [illegible] is Q. prinoides also [illegible] I [illegible] send you any of Q. Muhlenbergii (= Q. Castanea?) Q. alba is not abundant anywhere here [illegible] my certain [illegible] but I [illegible] one branch of [illegible] of a [illegible] [illegible] [illegible] I [illegible] [illegible] saw [illegible] are also found Q. [illegible]

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On lower lands the swamp white oak (Q. bicolor of Michx.) is associated with, but the swamp white oak [illegible] [illegible] [illegible] [illegible]. In Gray this latter oak is spoken of as a variety — I think it certainly a species [illegible] in bottom lands also trees but a little south of this [illegible] [illegible]. It affords good timber, fruit to large size closely resembling the Burr O. in general appearance but the smaller limbs are covered with a few scales while the Burr O. has corky bark limbs. The grain of wood also is similar to Burr O. and I could not find that you distinguish this species unless it is your Q bicolor.

Gray also speaks of Black Oak (Q. tinctoria) as good timber

I consider it the poorest
except the 2 habitats [illegible]
& also speaks of Red oak
being from [illegible] Whereas
I know it to be the very
best of which [illegible]
splits for [illegible]
boards, rails &c &c, number
& makes good fire wood
& grows to a very large size
especially on River bottoms
the Q. [illegible] I have
never been able to recognize
the Black [illegible] oak (Q. [illegible])
I have not found in Holt
or Marion [illegible] only in
the East [illegible] it
abounds — [illegible] Q. [illegible] is
is not found west of
Nodaway River —
The Burr oak (Q. macrocarpa)
is common here only on bottom
lands. Near Mo River it is
common on hills where the

"Bluff" or Loess clay occurs.
A line passing E & W. accross
the state about 20 to 30 miles
N. of H & St Jo R.R. will be found
on the north Q. macrocarpa
abundant only on hills
growing straight but not of
so vigorous an appearance
as [illegible], the tree tops
[illegible]
of Q. [illegible], but [illegible]
[illegible]
[illegible]
by so called [illegible]
[illegible]
[illegible] in [illegible]
Shelby Co. [illegible] De Kalb &
[illegible] Q. Muhlenbergii [illegible]
[illegible]
[illegible]
[illegible]
Bl. Oak & Shingle Oak [illegible]
[illegible] ([illegible]
[illegible]) [illegible]

[illegible] reached
2 [illegible] & I [illegible]
[illegible] of this & that [illegible]
the Kitts are probably in
collection of Clarke's

If - I remain at
home this year I can
collect some of them the
seeds if you wish -
The little bush growing on
hillsides seems to affect
pieces of stone & covers the back
[illegible] The seed remains [illegible]
four months - It is related
to Juniperus - only the cones
[illegible] not distinguished but
the leaves are [illegible]
it grows in [illegible]

Does Eucalyptus
grow out doors in this
latitude? I suppose not
I received a letter
(of which I send copy)

from Dr Hayden in
answer to yours
with [illegible]
[illegible]
E. C. [illegible]

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10 ~ ferns from [illegible]

Rec'd April 24
Ans [illegible]

Toronto. Woodson co Kansas
April 21 - 1879.

Dr Engelmann Dr Sir

It is now sometime since I sent you anything, still I have kept you & science in my thoughts. During surveys in Kansas I have not failed to notice many things of scientific interest. This is generally all prairie - But the larger streams have borders of timber but not as great variety as in Mo — Although I have seen or heard of a statement from Dr Hayden asserting that timber would grow as stable on prairie as in our wooded timber region [illegible] of Mo, yet I see evidence everyday of the hard struggle of trees to attain height. On Verdigris River there are tall trees because the timber belt is often one-a ½ mile wide

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on all other streams we find
the Burr O - presenting a depressed
look as if crushed down from
above and on smaller streams
where Elm Oak or Hackberry grow
near the river beds they present the
appearance of being crushed from
above - It is apparent at first
sight - as if they had striven in
vain to reach up. the bark on
the same species is also whiter
than with us. - I particularly
notice this on the Burr Oak
Pin Oak & Red bud - & Black Walnut
I have not seen White Oak nor
Swamp White O. in Woodson,
Greenwood Elk or Cowley Cos
In Cowley I first found the
Bumelia lanuginosa - last seen
East going North in Jasper
Cedar & Cole Cos. Mo -
Bl. Walnut, Am Elm, Red Elm -
Buckeye, Burr Oak, Hackberry & Red bud
are chief woods in this county -

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I saw the Yucca Angustifolia
in West part of Elk co -
I send you
1- Anemone Caroliniana - common
4=1 " " purple -- you stated
once that it presented form of
the European. A. stellata - do
you consider it that - or only
a varie of A. Caroliniana?
2 - a Gray leaf wild thistle
3 - Fern & lichen Pellaea atropurpurea
5 - Fern Notochlaena × Peltigera dealbata
6 - " Woodsia obtusa
7 - Ribes aureum. It found
growing in Magnesian Limestone
crevices where a little soil had
lodged - said to have good fruit
8 - a Dwarf Prunus Texana plum - good fruit
plant 3 to 4 high full of blossom
9 - A Oenothera Missouriensis pod with 4 alations
found after on prairie - pressed
here so as to send in letter
said to have handsome flower
10 fern from Woodson Co Kansas
A. ebeneum

The following I have notes of blooming of plants out here - Been quite cool & very windy up to this time

March 10 - In Elk co - Erythronium albidum
April 25 - Yellow Currant & Peucedanum foeniculaceum (very common) & Astragalus caryocarpus
In Cowley county
" 28 - Plum (Am. & dwarf) & Redbud
April 6 - Viola cucullata, Lithospermum canescens
" 7 - Anemone Caroliniana & Troximon Cuspidatum
" 8 Allium striatum, Sisyrinchium Bermudiana
" 11 Oxalis Violacea Viola delphinifolia

In Greenwood county
April 15. Corydalis crystallina, Phlox divaricata Viola stricta, Hypoxis erecta Comandra umbellata - Viola pedata
" 16 - Rhus aromatica, Claytonia Virginica Aesculus glabra Negundo aceroides

I do not know when I will be at home but if you write to me at Pleasant Hill I will always be glad to hear from you as to any wishes &c

Very Respectfully
yours &c
G. C. Broadhead

Note - I am engaged in Railway survey for Mo. Pacific Rail road in Kansas

Rec May 7th/78
ans

Trees in Kansas

Eureka Greenwood Co Kansas
May 4 - 1878

Dr Engelmann Esqr

Yours of recent date forwarded to me - I will look out for the grape. Do not know that I have yet seen any but the common V. riparia, although 20 miles SW. of here I saw a vine spreading out widely which is perhaps different. I have also spoken to a [illegible] man to save me seed of the Prunus - It is said to be very common on the Arkansas and called Sand Plum by many - I have not seen the Quercus imbricaria out here - the Red Oak though seems to be on all streams - Also have not seen shell bark Hickory west of

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Walnut creek valley - Eastern
part of Greenwood Co
The only Hickory nut is
the Common pignut Hickory
small nut with smooth
shell - white bark + rather smooth
except main trunk - The Pecan
I saw on Neosho River in
Woodson Co, but have not
seen anywhere west - the Bl.
Jack oak very common on
sandstone slopes always indicating
the presence of sandstone - The
Desmanthus brachylobus I have
scarcely failed to find on dark
soil overlying limestone - the
Chinquepin oak - sometimes
less than 2 ft high with acorns
on a sure indication of
underlying limestone - Box Elder
+ white maple + cotton wood on all streams
A great many persons have
planted out young trees chiefly

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cotton wood, Lombardy poplar - White
maple & Blk-Walnut - they all
seem to grow well - Have also
seen Catalpa quite flourishing -
I send you 2 species of
Baptisia
1 - a purple ~~very~~ pretty B. coerulea
2 - a yellow B. leucophaea
3 - a plant probably being
related Psoralea esculenta
4 - a pretty white flower
fading to pink - with
handsome cut & somewhat
bulbous shaped leaves Callirhoe digitata
5 - a Nemastylis acuta purple flower Iris related
to lily family - with
bulbous root, the latter 4 or
5 inches in ground - Ephemeral
blooms in morning - closes
after 4 P.M - when pressed
is almost obliterated -
6 - a small plant in grain Androsace occidentalis
I am now going [illegible]

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and in about 2 weeks
may be at Augusta
Butler Co Kansas
I will watch out for
plants. That fern I think
I can find 20 ms west of
this on the "Permian" Sandst
a ridge higher than the country
E & west across South
from a little [illegible]
[illegible] [illegible] [illegible] [illegible]
Then Cliffs of Ss & is
really a low mountain ridge
It is 20 ms. west of there
Yours truly

G. C. Broadhead

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Rec May 27

El Dorado Butler Co
Kansas
May 26 — 1879

Dr Engelmann Dr Sir
yours of 8th inst forwarded —
I find V. riparia common
on streams here — on prairie where
but ~~little~~ few other woody plants
I send Sp. collected 2 weeks
ago — also of 2 others which
seem only found at one place
the V. riparia being everywhere
I find 3 Psoraleas Viz P. esculenta
P. floribunda & a grey ~~leaf~~ Psoralea
scarcely yet in bloom. Did not
you make a mistake in species of
Callirhoe — I have collected in
S.W. Mo - a Callirhoe growing 3 feet
high - with handsome purple flowers at
end of flower branch — this in Kansas

is almost prostrate white changing
to a slight pink –
The dwarf Oak I think may
be only a var. of the taller chestnut
oak dwarfed on certain soil or
the almost entire absence of soil
kept dwarf in great measure by
Prairie fires – I find no
Hazel out here. nor Strawberry
Have seen the Strawberry in
Morrison & probably East part
of Greenwood co – I find
2 Cacti – one Mo. species
Opuntia (missouriensis or rafinesquii
which is it?) & an Echinoid
form with handsome blossom &
a small red berry like Honeysuckle
berry – That I send you Mam. Missouriensis (Nuttallii) (19)
I also send a yellow Oenothera –
18 An Astragalus probably A. Mexicanus caryocarpus
17 – A Composite plant Hymenopappus resembly Achillea –
16 – A Cruciferous plant Nasturtium sinuatum
15 – Ipomaea sepium
14 Oenothera serrulata

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13 Buffalo grass — 20. Fimbristylis spadicea
12 Vitis riparia (rupestris?)
11 Grape cordifolia?
10 Grape cinerea

The small prunus grows erect generally about 3 feet high & quite a handsome little tree — I fear it will have few berries this year Have seen only a very few green ones

The Oenothera Missouriensis is now in full bloom & the O. speciosa just beginning to blow — I also find Pentstemon grandiflora common — The Solanum rostratum seems to grow up thick in fields. The Baptisia leucantha not seen but other 2 species very common —

I send some more of that fern found it again on Magnesian limestone growing in cells in the rock — The round cactus grows on similar rock — of Permian age — Have not seen Astragalus distortus

The Schrankia uncinata is begining to bloom —

Yours &c
Truly
G. C. Broadhead

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Acc Oct 21

Pleasant Hill Cass Co Mo
Oct 20 1879

Dr Engelmann

[illegible] [illegible] I send you [illegible] of Plums from Cowley Co Kansas When there last Spring I observed a [illegible] row of the [illegible] Plum which you think is P. [illegible] It was full in bloom at time & I spoke to the man to save me some [illegible] did so & sent them to me a short time ago I will plant the [illegible] The plums I sent you were fine that [illegible]

I [illegible] [illegible] to you [illegible] in Kansas [illegible] Chestnut & [illegible] [illegible] [illegible] [illegible] [illegible] bluffs [illegible] [illegible] [illegible] & [illegible] [illegible] [illegible] also the [illegible] with a [illegible]

Yours

C. [illegible]

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Rec Dec 6

Miami Co. Kansas Dec 4 - 1879

Dr Engelmann Sir

The Q. I find here growing large seems to possess characteristics of Q. Muhlenbergii in younger trees have especially on twigs smooth dark colored bark becoming scaly as grow older — even to 8 or 10 in Di. quite scaly — Older trees bark is whitish looking in a 2 ft. tree very much like Q. alba — but all small twigs are smooth & scaly as they become larger — Old tree outside bark soft spongy — [illegible] yellow after being [illegible] a while —] I sent you plum seed —

In preceding Kansas Ac. Sci. in Nov — at Topeka — Mr J.H. Caruth speaks of certain plants in Kansas Viz Cornus florida — now that may be in extreme S.E. for it is in Newton co Mo — as well as Sassafras He also speaks of Vaccinium vacillans — & Fraxinus quadrangulata — these may be in same district for I have not recognized either in Mo N. of Saline Johnson Cedar & Jasper —

In Caruths list of Kansas plants published 3 years ago, he also names Gaylussacia resinosa as being found at Baxter springs —

He names Q. imbricaria as found at Lawrence & Q. bicolor at Osawatomie – the latter I have not seen in Kansas

Popenoe says Juglans cinerea is found in Lyon Co. Kansas must be a mistake as I have not seen it west of Lafayette Co Mo – probably he saw it planted in a yard – Carruth speaks of Salvia pitcheri in Kansas – not Salvia azurea – How is that? Vasey in his Catalogue speaks of Frangula Caroliniana – which is Error that or Rhamnus? — He also is in Error about Oaks Q. imbricaria – not durable – also Q. rubra of little value except for Barrel staves & Q. palustris – wood stronger & more durable than Scarlet O. !! Now the truth is that Q. imbricaria is useful for Rails & makes best fuel of any black O. & is more durable than any black O. The Q. rubra is useful for many purposes – Rails Boards & is a durable oak of the dark bark var – whereas Q. palustris is no account at all – Rails will not if it last over 2 years – hard to split on account of knots twining it together – If cut split & put when it will dry in about 3 or 4 months will do to burn – but a green stick put on fire would remain 2 days before burning – Gray made some of same mistakes – I was raised among these trees & know

yours truly
G. C. Broadhead

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serrulata ?
1 - Alnus - bank of stream Las Vegas Spgs N.M.

2 Oak undulata 6 ft high hillside " 3 do
~~5~~3 do do
~~4~~ - Hillside near Stream do
~~5~~ - Bank of Stream do
~~6~~ - Hill side smallbush do
~~7~~ - Hillside near stream do
~~8~~ - Hill side 10 ft high smallbush do

Let me know if any plants are left out

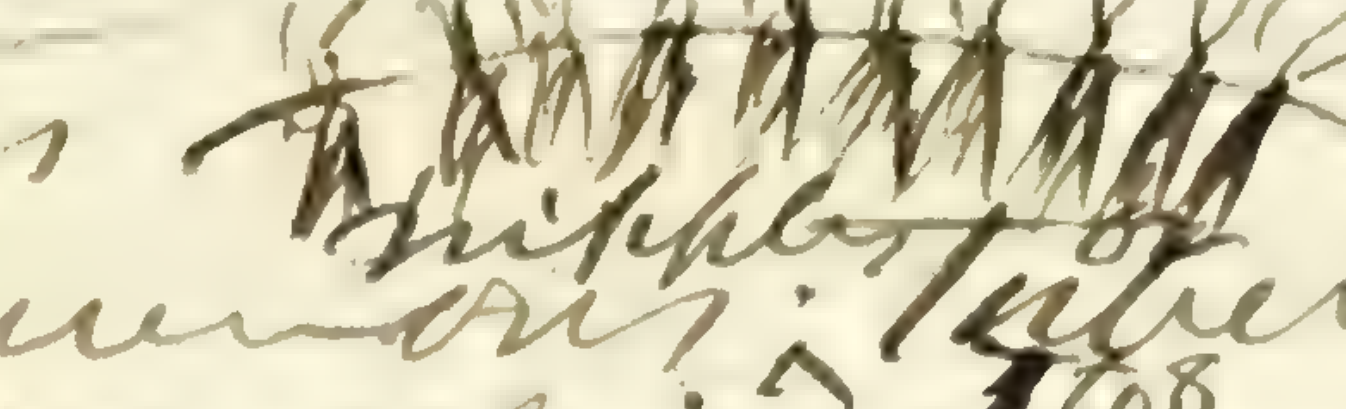
~~11~~ - near water Las Vegas
17
~~18~~ - very common "
~~19~~ - at Las Vegas also found at La Junta Colorado & Lakin Ks
~~20~~ - found at Las Vegas N.M. at Lakin Kansas & at La Junta Col -
~~21~~ Physalis lobata
~~22~~ - Astragalus - Las Vegas N. Mexico
~~24~~ - Valley of Moro - N. Mexico
~~27~~ - Hillside Las Vegas
~~26~~ - Mountain side Las Vegas
~~28~~ - near Water Las Vegas Commelyna
~~29~~ " "
~~30~~ - Low ground - Las Vegas
31
~~25~~ - Rocks Opuntia missouri Las Vegas
~~35~~ - Dry ground among Scrub oaks Las Vegas - very handsome
37 - Low ground Las Vegas
~~38~~ - Vine "
~~39~~ - on Rocks Las Vegas
~~42~~ - at Las Vegas also at Lakin Kans
~~48~~ - Bank of Stream Las Vegas

Pleasant Hill Mo Jany 5 - 1880

Dr Engelmann
Dr Sir

Rec. Jan 7th 1880
ans by P.C. & March 30

I see you have returned from N.Y. I therefore send you results of some collecting past year - a few from Mo - a few from Kansas the others from New Mexico -

A list you will find with this - At Las Vegas I found 5 Evergreens - 2 cedars 1 fir & 2 pines - I also send collected by another person from N E New Mexico Colfax co - a few - including 3 Evergreens - only ones there found - I brought 4 species of Cactus - but two died - It was similar to that I obtained in Kansas last year - I have an Opuntia of which I send a flower - I also saw another Opuntia - also a straggling tree like Cactus 6 species in all - one I have about 4 in across disk which is slightly rounded thus  nipples as if studded with numerous tubercles 1/2 to 3/4 inch long from which grow the spines 5 to 8 - Another Cactus I have is handsome Has 4 to 5 stout spines an inch long on prominences of polygonal ridges - color of plant dark green -

Please let me hear result of investigations when made

~~45 &~~ 49 fm Rocky Las Vegas
51 — Mountain side Las Vegas
50 & 66 — Mountain side Las Vegas
52 do
Nos 54 ~~55~~, 57, 58, 56 & 59 are from Lakin, Kearney co Kansas
No 55 very showy all along ~~hills~~ roadsides
~~No 60~~ — R Road — Moro valley N Mexico — very showy
~~61~~ — Lakin Kansas — not seen in N. Mexico —
67 — Straggling Evergreen — few on slope Mtn sides Las Vegas
65 — Common around Las Vegas — largest tree in that vicinity sometimes seen 2 ft dia — full grown cone over 3 ins — across base which is flattened conically (is it P. ponderosa?)
~~62~~ Euphorbia Common in Kansas — but not seen in N. Mexico —

63 — Jefferson co Mo
~~64~~ "
~~68~~ — Pinus (nut pine) Las Vegas
~~69~~ — Pinus ? — (Cass, co Mo
70 — Cedar from E part Colfax Co N. Mexico — dry Cimarron —
~~71~~ — Cedar from "
72 "
73 — Root "
74 Nut pine "
75 — plant bloom "
Nos 70, 71 & 74 I was informed were the only Evergreens the locality — Colfax Co — New Mexico on Dry Cimarron

The taller Cactus I saw on Moro River but few cars — used to make Canes & has a handsome reddish purple flower
Nearly every plant I saw in N. Mexico different from ours — I was there 1st week of August just after 1st Rain for 2 years And I conclude that all west of middle Kansas is a desert — as marked on Early Geographies — Good authority at Larned Kansas say that it is a failure to attempt raising any kind of tree even there

Yours truly
G. C. Broadhead

1.B

I send also another package with pieces of moss obtained in a boggy spring 7 mi. S.E. of Sedalia Mo — associated with Mastodon bones. Mr R A Blair of Sedalia has a fine collection of these bones which he obtained last

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water from the
spring also the
mouth — Diam —
of spring not over
20 ft with long
& to 7 ft depth the
he obtained parts
of 8 skeletons of
Mastodon — a few
flint implements of
man also obtained
a full account of
same communicated the
January No— 1881
of Kansas City
Review of Science
& Industry

AB

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MISSOURI BOTANICAL GARDEN

Rec Febr 2^d
ans " "

Pleasant Hill Mo Jany 30 1881

Dr Engelmann

Dr Sir The wood I sent you obtained from spring with Mastodon remains I suppose to be cypress - was I correct -

In Lewis & Clarks Travels to Rocky Mts 1805 & 6 - I find mention of a plant called by them "Wappatoo" - or Sagittaria Sagittifolia" - Root very much eaten by Indians - made into bread - said to be good, leaf small sagittate - Is it our Sagittaria variabilis Eng - a var of which is S. sagittifolia In Cyclopedia Nat. History I find that a part of this plant is much relished by Tartars of Asia. Another plant is spoken of & abundant in some parts of Oregon called Cows - Do you know what that is? - also he speaks of Quamash or Pasheco - quamash - I cannot find these named in

Botany of 12th vol Pacific
R.R. Survey

Past 3 months been more dry & cold far than usual — On 9 & 10th Nov — had 1.9 inches rain On 17th Nov 1½ inches snow which is deepest snow we have had this winter & not over 3 inches total of snow has fallen since & in such light amts (2 in on 27 & 28 Dec) at each time as not to be measurable — From 15th Nov to 31st of January total amt water Rain & snow = 0 57/100 inches — At the same time weather been constantly cold — Sexton say 18 inches frozen ground but ground very dry — water in wells has become scarce —

19th Nov at 7 A Thermometer +4
21 " +8

warmest on 30th at 12 M
at 31

Dec 5 & 6 at +5°
7 at +4
4 & 13 at +53 Highest
27 at +2
28 — 5 at 7A — 2 at 10A & 12A — 3 at 5P —
29 at —17 at 7A —15 at 12M
January has been correspondingly cold & dry until 29 —

First thaw on 29 & 30th —)

Yours Respy
G. C. Broadhead

Rec Apl 5
Ans — 6

MISSO' ANICAL G
GEORGE ENGELMANN PAPERS

Pleasant Hill Mo — Ap — 4 — 1881

Dr Engelmann

Dr Sir — The list rec'd — for which I return many thanks — Are there any new plants among them? Some, I think are described in Coulter's Colorado Flora. I do not wish the specimens returned — But there is one I cannot find of which you have in list so please send it — It is no 60 — Mentzelia multiflora — Did you have no 41 — a fern I have 3 leaves of it — I do not find it in your list. — The Alnus you mark A. ~~serrulata~~ viridis? It does not ~~just~~ appear just like our A. serrulata found in Mo. You have Pseudotsuga Douglasii (Abies) Is this placed in a new genus formerly Abies? I suppose it is the same I have labeled no. 50 — I thought it near the spruces — I send you spec. of my no 50 — is it same as your no 26? It has a very pretty cone — I also send a plant not in your list I believe (a Portulacca like plant) and another of which I could not find — a large flowering plant —

The plants from Las Vegas are all obtained from Elev 6300 to 7000 feet above sea probably some above 6700 — The Oak I sent I found from 6300 to near 7000 and probably grows above — The Pinus also The Abies concolor I saw generally about 6400 some as high as 6700 — No 48 you have Populus Fremontii — where is that described — I send as follows of some of form

Pseudotsuga Dougl.?

No 1 — — Is it — same as you have no 26; no cone.

No 2 — same as "form" former no 26 —

3 — ~~with~~ rather large flowers — is it Mentzelia yes

4 — Red berry from Cactus I have giving here only found found at Las Vegas — at elevation of about 6600 feet Mamillaria

5 — Like Portulaca Talinum calycinum?

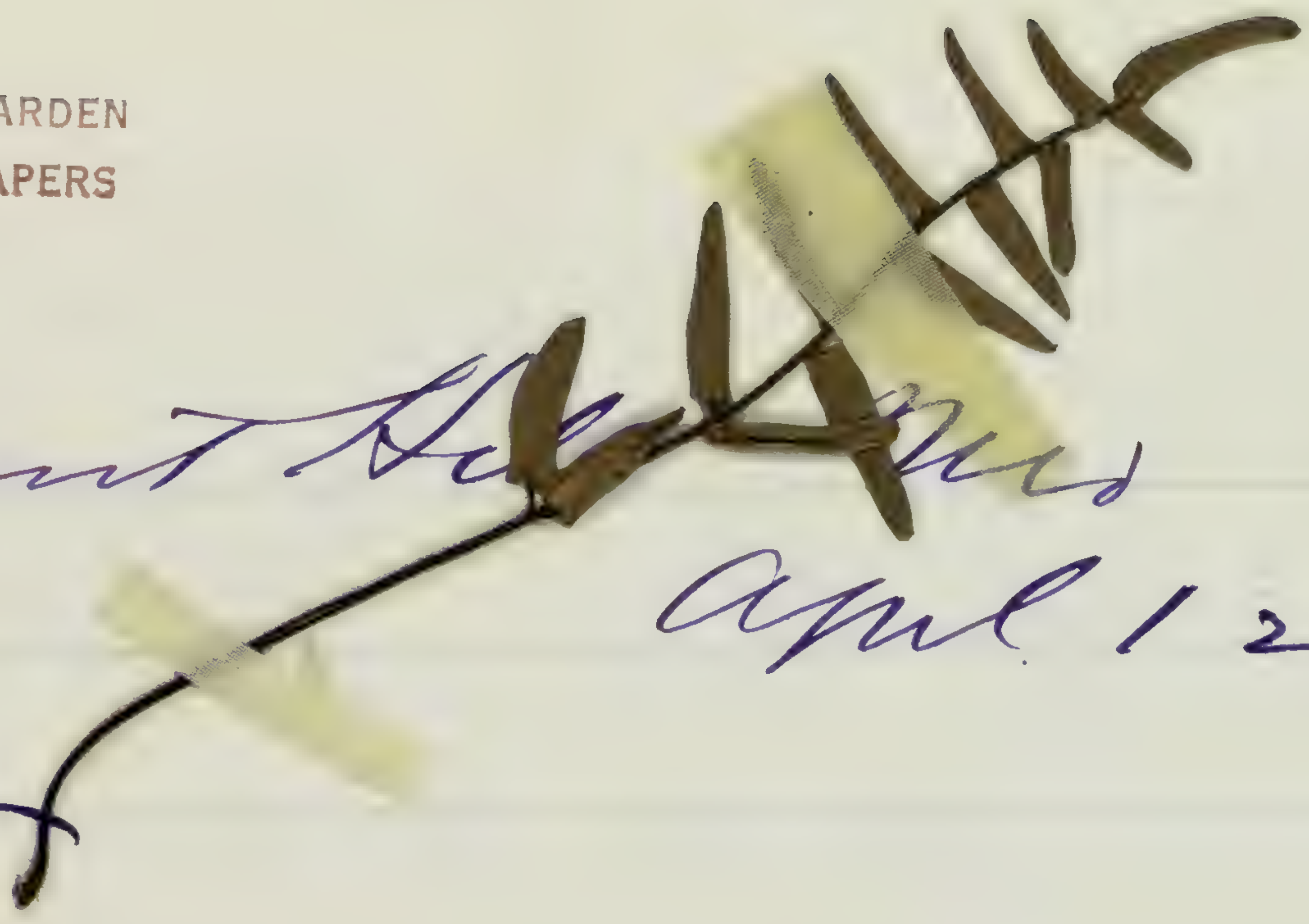
I expect to be part of this Spring & early summer over a large part of Missouri & Kansas — Have to work up the Quarry industry for 10th census — I marked their boundary on map for Letterman — & recently Sargent wrote me thanking me for it & requesting I

would do the same for Kansas — But cannot until I see more of Kansas

If it would not impair Cactus I could cut off a little piece & send with it

Truly yours
G. C. Broadhead

Ans April 13
a —— P.C.



Pleasant Hill Mo
April 12 1884

Dr Engelmann
Dr Sir

I enclose to you today 2 Cacti — from N. Mexico One I think is alive the other doubtful. After Examination you can oblige by returning such as are alive — but if other is dead I do not wish it — I have great trouble in growing Cactus.

I also send sk. of fern leaf which you did not receive —

Did not you mistake in naming the Schrankia — that has a yellowish white flower — Our *uncinata* has rosy flower.

Yours
G. C. Broadhead

I can send you the Mentzelia if you wish it.

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Ans June 15

Pleasant Hill Mo
June 13 – 1881

Dr Engelmann

Dr Sir I send you a few plants chiefly collected from Kansas about a week ago No 11 – is from Prairie Frankfort Marshall co Kansas.
No 5 – V. sag. from Saline Co Mo the others are from near & at Cawker city Mitchell co Kansas
No – 4 I collected 2 yrs ago at Garnett Anderson Co – Kan. I believe it is Callirhoe involucrata? No-6- is not well prepared but looked very handsome Farther west I noticed great clusters of it – No 4. was also very abundant At Frankfort Kansas I noticed Oenothera Missouriensis abundant & from that W. The Pentstemon grandiflora very abundant The hills. Verbena abunds at Cawker & west.
I go to Colorado tomorrow be about 2 months

Yours G. C. Broadhead

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Rec Febr 24 Pleasant Hill Mo
Feby 20 – 1882

Dr Engelmann

Dr Sir On 17 & 18 warm pleasant slight drizzle PM on 17 – on 18 – Rain PM – wind S. until after 2 PM. on 18 – changed strong to N. after night —

On 19th looked out & everything covered with ice – calves came up with icicles 4 inches long hanging all over them & mostly staid on them all day Rain & snow all day yesterday (19th) Raining at night & freezing 20 – more ice than yesterday ice on windward & top side of limbs over one inch thick – up to 10 AM today crash every few minutes large limbs breaking off – peach trees all broke all to pieces and also other trees with brittle wood – old apple trees broke to pieces & locust limbs generally broken off a fine maple broken all to pieces. Young apple trees not broken much –

One apple twig with several branches on it – the larger one size of my little finger weighed 7 lbs –

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A cedar twig ~~off [illegible]~~ 1½ ft long with numerous side branches main stem at large end ¾ inch weighed 5 lbs — tree 10 ft high & about same from outside to outside of branches — this calculated to have at least 400 lbs of ice on it

A similar sleet I think was in Dec 1865 (?) & trees broken then yet show evidences in twisted & bad growth of limbs

In list of specimens I sent you; ~~[illegible]~~ from Colorado you named about ½ I believe — Did you name others — If so can you oblige by letting me know what you determined

21 – sleet continued all [illegible] thermometer [illegible] 32 – for morning at sunrise +13 noon [illegible] – sleet [illegible] rained last night & this morning
rained [illegible] = 2.4 inches – sleet ice crust on ground [illegible]

I am
Yours
Truly
G. C. Broadhead

I received Gray & Hooker paper pub. by U. S. Geo. Survey on Flora Rocky Mts — also Maps of [illegible] showing distribution of Pine flora — very interesting — published by Census — I sent to Prof Sargent a map of Mo — & of Kansas with tree boundary marked on them —

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Rec 22 April
Ans

Pleasant Hill Mo Apl 20 1882

Dr E Dr Sir

I send you a small Viola — I found on low grounds here a few days ago — a great many at a place and have never found it before — —

Many Thanks for your paper on Isoetes

I furnished Sargent with Bot- map of Mo & Kansas — but it will not appear as Complete as I made it as he said he was restricted — I also sent him a preliminary map showing Prairie areas in Mo — all of them I did not know exact line of — But made it

as approximately
close as I could
He sent or had
sent to me several
maps of other States
showing Prairie area

Truly yours

G. C. Broadhead

As soon as I can get time
I want to complete some
Geol. Papers & send to Academy

Rec May 29
Ay

Pleasant Hill Mo May 27
1882

Dr Engelmann

Dr Sir I have just rec'd — Canadian Geology Rep-progress 1879-80 — among other things in it are interesting maps showing distribution of trees in British America — one special of Coast trees West.

A gentleman here has just returned from N. Mexico — He gives me a plant collected from 50 miles N. of El Paso in Sierra Blanca Mts.

It possesses property of drying and after a long time even a year will open out as fresh & green as at first. Do not know if a single leaf will — But my plant in a

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few hours opened green
& fresh — would it by
keeping in Water decompose
or should it occasionally
be taken out to dry — If
you wish I may be able to
secure a plant for you
He bought a number but has
disposed of most of them —
He also has a large
melon shaped Cactus
over a foot in diameter
Has seen them there
much larger —

I am
yours Truly
G. C. Broadhead

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